WHAT IS CLAIMED IS:

1. An apparatus for transmitting an information signal, comprising:

first interleaver for interleaving a first portion of said information signal in accordance with a first interleaving format to provide a first interleaved signal;

second interleaver for interleaving a second portion of said information signal in accordance with a second interleaving format to provide a second interleaved signal;

shuffler for shuffling said second interleaved signal to produce a shuffled signal;

first transmission subsystem for transmitting said first interleaved signal on a first transmission channel; and

second transmission subsystem for transmitting said shuffled signal on a second transmission channel.

2. The apparatus of claim 1 further comprising a demultiplexer for receiving said information signal and dividing said information signal into said first portion and said second portion.

3. The apparatus of claim 2 wherein said demultiplexer divides up said information signal by placing each odd symbol into said first portion and placing each even symbol into said second portion.

4. The apparatus of claim 2 wherein said demultiplexer divides up said information signal by placing each even symbol into said first portion and placing each odd symbol into said second portion.

5. The apparatus of claim 1 further comprising a forward error correction module for receiving a set of bits and for encoding the sets of bits in accordance with a predetermined forward error correction format to provide said information signal.

6. The apparatus of claim 4 wherein said forward error correction format is a convolutional encoding format.

7. The apparatus of claim 4 wherein said forward error correction format is a turbo coding format.

8. The apparatus of claim 1 wherein said first interleaving format and said second interleaving format are block interleaving formats.

9. The apparatus of claim 1 wherein said first interleaving format and said second interleaving format are bit reversal interleaving.

10. The apparatus of claim 1 wherein said first interleaving format and said second interleaving format are different from each other.

11. The apparatus of claim 10 wherein said first interleaving format is a block interleaving format and said second interleaving format is a bit reversal interleaving format.

12. The apparatus of claim 1 wherein said first interleaving format and said second interleaving format are the same.

13. An apparatus for transmitting an information signal, comprising:

first interleaver for interleaving a first portion of said information signal in accordance with a first interleaving format to provide a first interleaved signal;

second interleaver for interleaving a second portion of said information signal in accordance with a second interleaving format to provide a second interleaved signal, wherein said second interleaver comprises means for reordering symbols in accordance with a predetermined interleaver format to provide a shuffled and interleaved signal;

first transmission subsystem for transmitting said first interleaved signal on a first transmission channel; and

second transmission subsystem for transmitting said shuffled and interleaved signal on a second transmission channel.

14. The apparatus of claim 13 wherein said shuffler performs shuffling by cyclically rotating sets of a predetermined number of symbols.

15. The apparatus of claim 14 wherein said predetermined number is four.

16. The apparatus of claim 15 wherein said shuffler rotates said sets of four symbols by two symbols.

17. The apparatus of claim 11 wherein said shuffler performs shuffling by flipping sets of a predetermined number of symbols.

18. The apparatus of claim 17 wherein said predetermined number is four.

19. The apparatus of claim 13 wherein said first transmission subsystem transmits said first interleaved signal on a first transmission channel by spreading said first interleaved signal in accordance with a first Walsh function to produce a first Walsh coded signal; and

wherein said second transmission subsystem transmits said second interleaved signal on a second transmission channel by spreading said second interleaved signal in accordance with a second Walsh function to produce a second Walsh coded signal.

20. The apparatus of claim 19 wherein said first Walsh function is the same as said second Walsh function.

21. The apparatus of claim 19 wherein said first Walsh function is orthogonal to said second Walsh function.

22. The apparatus of claim 19 wherein said first transmission subsystem and said second transmission subsystem are synchronized in time and phase.

23. The apparatus of claim 19 wherein said first transmission subsystem further comprises a first PN spreader for receiving said first Walsh coded signal and spreading said first Walsh coded signal in accordance with a first pseudonoise (PN) function to provide a first PN spread signal, and said second transmission subsystem further comprises a second PN spreader for receiving said second Walsh coded signal and spreading said second Walsh coded signal in accordance with a second pseudonoise (PN) function to provide a second PN spread signal.

24. The apparatus of claim 23 wherein said first PN spreader and said second PN spreader utilize quadrature PN spreading.

25. The apparatus of claim 23 wherein said first PN spreader and said second PN spreader utilize complex PN spreading.

26. The apparatus of claim 23 wherein said second transmission subsystem further comprises a delay element for receiving said second PN spread signal and producing a delayed PN spread signal.

27. The apparatus of claim 26 wherein said first transmission subsystem further comprises a first transmitter for upconverting to a first frequency and amplifying said first PN spread signal and producing a first transmission signal, and said wherein second transmission subsystem further comprises a second transmitter for upconverting to a second frequency and amplifying said delayed PN spread signal and producing a second transmission signal.

28. The apparatus of claim 27 wherein said first transmitter transmits said first transmission signal through an antenna and said second transmitter said second transmission signal through said antenna.

29. The apparatus of claim 27 wherein said first transmitter transmits said first transmission signal through a first antenna and said second transmitter said second transmission signal through a second antenna.

30. The apparatus of claim 27 wherein said first frequency is equal to said second frequency.

31. The apparatus of claim 27 wherein said first frequency is greater than said second frequency.

32. The apparatus of claim 19 wherein said first transmission subsystem further comprises a first transmitter for upconverting to a first frequency and amplifying said first PN spread signal and producing a first transmission signal; and

wherein said second transmission subsystem further comprises a second transmitter for upconverting to a second frequency and amplifying said second PN spread signal and producing a second transmission signal.

33. The apparatus of claim 32 wherein said first transmitter transmits said first transmission signal through a first antenna and said second transmitter said second transmission signal through a second antenna.

34. The apparatus of claim 32 wherein said first frequency is equal to said second frequency.

35. The apparatus of claim 32 wherein said first frequency is greater than said second frequency.

36. The apparatus of claim 32 wherein said first transmitter transmits said first transmission signal through said antenna and said second transmitter transmits said second transmission signal through said antenna

37. A method for receiving an information signal, comprising:

demodulating said first portion of a received signa;l to create a first demodulated signal;

deinterleaving said first demodulated signal according to a first deinterleaving format to produce a first deinterleaved signal;

demodulating said second portion of the received signal to create a second demodulated signal;

unshuffling said second demodulated signal to produce an unshuffled signal; and

deinterleaving said unshuffled signal according to a second deinterleaving format to produce a second deinterleaved signal.

38. The method of claim 37 further comprising multiplexing said first deinterleaved signal and said second deinterleaved signal to create a multiplexed signal.

39. The method of claim 38 wherein said multiplexing further comprises alternating symbols received in said first deinterleaved signal and said second deinterleaved signal, wherein all odd symbols of said demultiplexed signal are extracted from said first deinterleaved signal, and all even symbols are extracted from said second deinterleaved signal.

40. The method of claim 38 wherein said multiplexing further comprises alternating symbols received in said first deinterleaved signal and said second deinterleaved signal, wherein all even symbols of said demultiplexed signal are extracted from said first deinterleaved signal, and all odd symbols are extracted from said second deinterleaved signal.

41. The method of claim 38 further comprising receiving said demultiplexed signal and decoding said demultiplexed signal in accordance with a predetermined forward error correction format to extract an information signal from said demultiplexed signal.

42. The method of claim 37 wherein said first deinterleaving format is the different from said second deinterleaving format.

43. The method of claim 42 wherein said first deinterleaving format is block deinterleaving and said second deinterleaving format is bit reversal deinterleaving.

44. The method of claim 37 wherein said first deinterleaving format is the same as said second deinterleaving format.

45. The method of claim 37 wherein said unshuffling comprises cyclically rotating sets of a predetermined number of symbols.

46. The method of claim 45 wherein said predetermined number is four.

47. The method of claim 46 wherein said unshuffling comprises rotating said sets of four symbols by two symbols.

48. The method of claim 37 wherein said unshuffling comprises flipping sets of a predetermined number of symbols.

49. The method of claim 48 wherein said predetermined number is four.

50. The method of claim 37 wherein said first demodulation subsystem further comprises a first receiver subsystem for amplifying and downconverting from a first frequency a received signal to produce said first portion of a received signal, and

wherein said second demodulation subsystem further comprises a second receiver subsystem for amplifying and downconverting from a second frequency said received signal to produce said second portion of a received signal.

51. The method of claim 50 wherein said first frequency is greater than said second frequency.

52. A method for transmitting an information signal, comprising:

interleaving a first portion of said information signal in accordance with a first interleaving format to provide a first interleaved signal;

shuffling and interleaving a second portion of said information signal in accordance with a second interleaving format to provide a shuffled and interleaved signal;

transmitting said first interleaved signal on a first transmission channel; and

transmitting said shuffled and interleaved signal on a second transmission channel.

53. The method of claim 52 further comprising demultiplexing said information signal into said first portion and said second portion.

54. The method of claim 53 wherein said demultiplexing comprises placing each odd symbol into said first portion and placing each even symbol into said second portion.

55. The method of claim 53 wherein said demultiplexing comprises placing each even symbol into said first portion and placing each odd symbol into said second portion.

56. The method of claim 52 further comprising encoding a set of bits in accordance with a predetermined forward error correction format to provide said information signal.

57. The method of claim 56 wherein said forward error correction format is a convolutional encoding format.

58. The method of claim 56 wherein said forward error correction format is a turbo coding format.

59. The method of claim 52 wherein said first interleaving format and said second interleaving format are block interleaving formats.

60. The method of claim 52 wherein said first interleaving format and said second interleaving format are bit reversal interleaving.

61. The method of claim 52 wherein said first interleaving format is different from the said second interleaving format .

62 ~~63~~. The method of claim 61 wherein said first interleaving format is a block interleaving format and said second interleaving format is a bit reversal interleaving format.

63 ~~64~~. The method of claim 52 wherein said first interleaving format and said second interleaving format are the same.